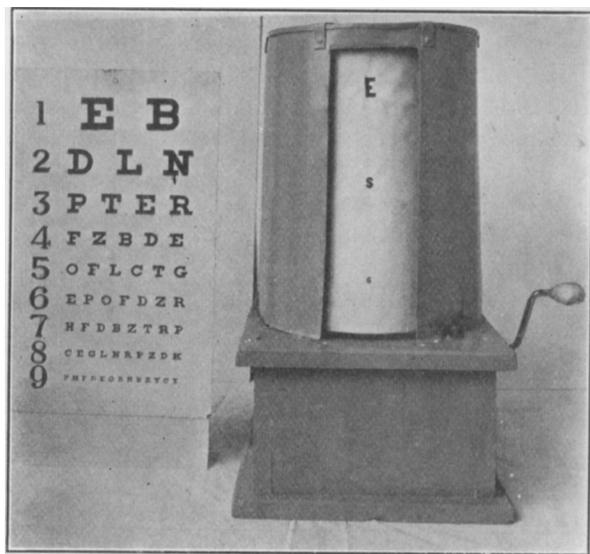


illumination. This tends to prove that detail can be observed with greater facility.

The apparatus in Fig. 1B demonstrates the effect of higher intensity on a moving object. A ten inch-phonograph turn table is surmounted by a cylindrical drop on which is placed a series of letters of varying size. Opaque shields limit laterally the visible area of the drop. The turn table is set in operation at a definite speed and the illumination on the apparatus is varied as above. A similar phenomenon is noted. With the high level illumination the letters can be discerned much more readily as they flash past the opening and the smaller type is legible.

An interesting psychological effect is always evidenced. A decided change in apparent speed results.



A FIG. 1 B

The turn table seems to slow down or speed up respectively depending on whether we pass from three foot-candles to fifteen foot-candles or from fifteen to three foot-candles. The governor on the spring motor certainly prevents such a change. In developing this apparatus, the experimental model utilized an electric motor as the driving power. This was connected to the circuit used for illumination and the effect was so marked that one at once assumed that a voltage drop occurred resulting in lower motor speed. Check tests soon indicated that the effect was purely psychological.

By the observation of this device, any one will be convinced that moving objects appear to move more slowly when properly illuminated and can be watched by the operator with less eye-strain.

**POOR LIGHTING CAUSES 25 PER CENT OF NIGHT ACCIDENTS ON MASSACHUSETTS HIGHWAYS**

Mr. A. W. Devine, headlighting inspector at the Registry of Motor Vehicles, Boston, Mass., who is directly responsible for the enforcement of the motor vehicle lighting laws in the state of Massachusetts

recently made an analysis of 800 night accidents which occurred on the Massachusetts highways during 1920 and 1921. A great many more accidents than this occurred during that time, but only 400 representative accidents are analyzed each year; the figures given, therefore, are an average of the results for two years. Mr. Devine found that of the 800 night accidents which he investigated, 25 per cent were due entirely to the lighting conditions; 17½ per cent being due to insufficient road illumination and 7½ per cent to glare.

The ratio of the number of accidents due to each cause is very significant. The popular opinion among state officials and others interested in motor vehicle lighting has been that glare is the predominating evil. The results of this analysis would indicate that as the cause of highway accidents at night, glare is not half so serious as insufficient road illumination.

**VALUE OF HIGHER INTENSITIES OF ILLUMINATION**

During the past year, Dr. M. Luckiesh of the Nela Research Laboratories has been investigating the effects of higher intensities of illumination on the speed of reading, and has found a definite increase of "speed of vision" as the illumination intensities increased. For ordinary reading matter (black print on white paper) the speed of reading increased 15 per cent when the illumination increased from 4 to 16 foot-candles. For black print on gray paper, the increase in speed was 50 per cent when the illumination intensity increased from 4 to 16 foot-candles. These data show the value of increasing the intensity of illumination and the results can safely be extended to cover many other visual processes in factory, office or home.

Another very interesting and important phase of the investigations was a determination of the illumination intensities voluntarily chosen by a large number of observers. For reading printed matter, such as the Saturday Evening Post, the mean value chosen was about 10 foot-candles (when a maximum of 30 foot-candles was available) and when the paper was dyed gray so that the print was seen on a gray background the mean value chosen was about 17 foot-candles, the other conditions being the same.

Incidentally, it was found that the observers chose more light when the maximum available intensity was large than when it was small. This is best shown as follows:

	Approximate Foot-Candles
Maximum available intensity.....	10 30 45
Intensity chosen for ordinary reading.....	5 12 16
Intensity chosen for reading from gray paper..	17 ..

Reading tests were used because reading is the most extensive visual activity and by using the gray background as well as the white, data were obtained which may be safely interpreted in terms of many other visual activities.